5208

Form 504
Ed. June, 1928

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
R. S. Patton *Director*

State: HAWAIIAN IS.

DESCRIPTIVE REPORT

~~*Topographic*~~
Hydrographic } *Sheet No.* 12 5208

LOCALITY

S. Coast
Island of Oahu

Maunalua Bay

19 31

CHIEF OF PARTY

Hubert A. Paton, Lieut. (jg.)

U. S. GOVERNMENT PRINTING OFFICE: 1930

DESCRIPTIVE REPORT

to accompany

HYDROGRAPHIC SHEET # 12

Maunalua Bay, Oahu, Hawaii

INSTRUCTIONS:

The work on this sheet was done under instructions dated July 14, 1931 and orders dated July 18, 1931. The object of the survey was to locate and develope possible landing places for troops, in case of war. It was desired to expedite the work as much as possible, because funds were not available for as thorough a survey as that accomplished by Lieut. E. R. Hand in previous years. In discussing the work with the Department Engineer and his representatives it was found that a development of the beach from the low water line to the 40 foot curve was desired. The lines should be spaced about 100 to 150 meters apart over the area with a much closer development of the openings in the coral reef. All sheets were to be 1:5000 scale.

SURVEY METHODS:

Standard methods for work of this type were used. A 24foot whaleboat was used. All soundings were taken with a bronze-center leadline with a ten pound lead. Control was furnished by triangulation and topography. In some places the cliffs were so steep and high that signals could not be placed as low as desired. Since a depth of 40 feet or more was obtained within 30 meters of shore, the sextant angles could not be taken accurately and in certain small areas it was necessary to estimate the distance off the shore as each signal came abeam.

The motive power for the sounding boat was at first only four oars. The speed of the boat was affected by the wind to a great extent. With a strong head wind, four oarsmen could hardly make headway. In the opposite direction only two or even less oars were sufficient. Later an outboard motor was furnished and was used on a bracket on the port quarter. This worked satisfactorly in smooth water.

Some difficulty was found in making a satisfactory lead line. The first ones were subjected to considerable tension as recommended on Page 44, Hydrographic Manual. These would test correctly when dry at the beginning of the day and would show a shrinkage of 2½ feet in eight fathoms after an hour's use. Later some leadline was obtained from the Str. Pioneer which was made up without any tension and these proved to be quite satisfactory. Since the leadsman had no previous experience it was decided to mark the lead line in feet, instead

of fathoms and feet. Since the soundings were to be plotted in feet this would give the desired depth without any computations. This type of line proved to be easier for the leadsman to learn to read and also the enlisted personnel could be used for office work in reducing the records, and accurate results more obtained with a certainity. The following system of marks were used:

5	feet	red cloth
10	"	leather with one strip
15	"	white cloth
20	"	leather with two strips.
25	"	blue cloth
30	"	leather with three strips.
35	"	red cloth
40	"	leather with four strips.
45	"	white cloth
50	"	leather with one hole.

The graduations between the marks were indicated with a seizing, white thread on the even feet and black thread on the odd feet.

PERSONNEL:

The members of the crew consisted of enlisted men from the 3rd Engineers, Schofield Barracks. None of them had had any previous experience. A sergeant was trained to take left angle and a private, first-class, was taught to record. The other men were all privates, ordinary. The undersigned took right angle and plotted.

DISCREPANCIES:

Over most of the shoal areas on this sheet there had been no previous surveys. Over the rest of the area the surveys of former years were not very complete. However the depths found by this party agree quite well with the previous depths. The least depth on the bar in Lat. 21° 16'.7, Long. 157° 43'.0 was found to be five feet instead of the one-half fathom shown on Chart # 4110

A sounding of 40 feet between Positions 199 and 200 "j" da y is evidently in error. It is recommended that the sounding be rejected.

DANGERS:

Outside of the reef, no dangers were found. On the inside of the reef there are numerous pipes, set in the coral, some of them covered at high water. These would cause considerable damage to a speed boat.

CHANNELS:

See special report to the U. S. Army, a copy of which is attached.

ANCHORAGES:

A good anchorage can be found inside the bar, mentioned on Page 2 . The bottom is soft mud and the depths range from five to twenty-four feet. There are no good anchorages outside of the reef on account of the coral which is liable to foul the anchor.

GEOGRAPHIC NAMES:

All names used on the Topographic Sheet "L" and on this sheet are well established and are in use on charts and maps of the region.

STATISTICS (FIELD NUMBER 12):

Number of positions	1508
Number of soundings	6963
Number of miles of sounding lines	89.7 (statute)
Area (square statute miles)	2.5

Respectfully submitted,

Hubert A. Paton

Hubert A. Paton, Lieut. (j.g.)
Chief of Party.

Limits: This sheet extends from Wailupe Radio Station to Koko Head.

Character of Coast: The beach is protected by a coral reef extending about one-quarter mile off shore. There are several openings through the outer edge of this reef, but only one leads into deep water inside. This one can be characterized as an excellent passage and landing. To enter it, bring the easterly one of two bridges over inlets into Kuapa Pond (Signal Red) on a bearing of N. 22° E. (true) and a depth of five feet can be carried over a narrow bar composed of coral and sand.

The opening is wide although the passage for the maximum depth is only about 50 meters wide. The bar breaks in moderate and heavy weather. An unusual peculiarity of this bar is that the breakers are larger for a day or so after the northeast trade winds calm down than when these winds are blowing steadily. Inside of this bar will be found a large area 600 meters long and 250 meters wide with a maximum depth of 24 feet and with a soft mud bottom. Deep water extends to a sand beach 100 meters southeast of Signal Red. This is an excellent place to land artillery.

Most of the other openings can be characterized as possible. They are all narrow, being bordered by coral heads awash. The opening south of Signal Dit (Long. 157° 45'.3) is crooked channel and not as good as the openings on either side of it.

The opening south of Signal Hop (Long. 157° 44'.7) is protected by a shoal, covered with 6 feet of water, which tends to reduce the size of the breakers farther in. The best approach is on the west side of this shoal.

The opening south of Signal Oar (Long. 157° 44'20") is the best one of the small openings. To enter it, bring the inshore end of a small pier on a bearing of N 32° W. (true).

The opening south of Signal To (Long. 157° 43'.8) is narrow and crooked but is marked by five pipes. The opening south of Signal Hit (Long. 157° 43'.4) is also marked with pipe.

Landings: Troops can reach shore by being brought into shoal water at all of these openings and then wading in to the beach. Landings are possible in exceptionally good weather on a smooth rock ledge extending between Signals But and Bin. Landings are impractical south of Signal But on around Koko Head to the limits of this sheet.

Respectfully submitted:

Hubert A. Paton

Herbert A. Paton,
Lieut (j.g.), U.S.C.& G.S.

To Accompany

HYDROGRAPHIC SHEET # 12

MAUNALUA BAY, OAHU, HAWAII

Sheet #12 and accompanying records have been inspected and are approved.

Hubert A. Paton

Hubert A. Paton
Chief of Party.

February 8, 1933.

Division of Hydrography and Topography:

Division of Charts:

Tide Reducers are approved in
5 volumes of sounding records for

HYDROGRAPHIC SHEET 5208

Locality **Maunalua Bay, Oahu, T. H.**

Chief of Party: **Hubert A. Paton in 1931**
Plane of reference is **mean lower low water reading**
1.1 ft. on tide staff at **Hanauma Bay**
6.1 ft. below B. M. **1**

Height of mean higher high water above plane of reference is 1.9 feet

Condition of records satisfactory except as checked below:

1. Locality and sublocality of survey omitted.
2. Month and day of month omitted.
3. Time meridian not given at beginning of day's work.
4. Time (whether A.M. or P.M.) not given at beginning of day's work.
5. Soundings (whether in feet or fathoms) not clearly shown in record.
6. Leadline correction entered in wrong column.
7. Field reductions entered in "Office" column.
8. Location of tide gauge not given at beginning of day's work.
9. Leadline corrections not clearly stated.
10. Kind of sounding tube used not stated.
11. Sounding tube No. entered in column of "Soundings" instead of "Remarks".
12. Legibility of record could be improved.
13. Remarks.

David P. Whitney
Chief, Division of Tides and Currents.

Feb 27, 1933

Section of Field [illegible]
Report on [illegible]
Waianalua Bay, Oahu, T.H.
Surveyed in [illegible]

Chief of Party – H. L. Paton
Surveyed by H. L. P.
Protracted by J. W. Becker
Sdgs. plotted by H. L. P.
Verified & Inked by Harold W. Murray

1. The records conform to the requirements of the Hydrographic Manual. In certain sections however, an entry of the figure "7" may be frequently mistaken for the figure "4". For example, see page 7, Vol. #5. ✓
2. The plan, character and extent of development satisfy the general instructions. ✓
3. Sounding line crossings are ample and afford good agreement. ✓
4. The field protracting and plotting was of excellent quality. ✓ Spacing of soundings and odd time intervals were strictly observed.
5. The zero, six, twelve, eighteen & thirty-foot curves can be satisfactorily drawn. The peculiar formation of the zero curve in approx. long. 157° 43' 30" is based on the note-

"walking" (pos. 1K) and the boat sheet. The assumption ✓ is made that with a tide of zero, the field party walked along the water's edge thereby throwing all the area South of "K" day outside the zero curve.

6. ~~No junction~~ An overlap was made with H-4673(1926) on the west, ~~A direct comparison of soundings seems good agreement within approximately 30m. Weight was given to these soundings in compiling the curves.~~ and is satisfactory ✓

H-4553(1926) to the south of this survey possesses a few lines inside the limits of this survey. The field ✓ party has shown these soundings in red on the B. S. Differences of 4 or 5 feet are common.

A few soundings were transferred in pencil from H-3253(1910-11) which covers about 2/3rds of this sheet. (Scale 1-20,000). Indications of depth changes are very well supported. In two instances, exact least depths in shoals were obtained. In lat. 21°16'35", long. 157°43' 3".5, a rock awash was transferred to this sheet where it falls about 25m S.W. of a breaker indication.

7. Rocks. The rock awash, 30m. S.W. of ⊙But in lat. 21°16' was transferred from the Topo. #4376(1928). Also the rock awash, ✓ about 75m. W of ⊙ Apt. The Rock approximately 30 m. ✓ S.W. of ⊙Loc is assumed to be the same as the one determined by pos. 176j. The rock awash approximately 95m. W. by S. of ⊙Apt. is from the B. S. ✓

The rock awash in approx. lat. 21°16′46.″5, long. 157° 45′12″ was transferred from the Boat Sheet. ✓

8. Topographic Remarks. Two topographic sheets cover this area:- T-4376(1928) and T-4687(1931). (See D.R. of T-4687 for reason of later survey.)

An overlay comparison of the two topo's shows several changes in certain sections of approx. 20m in a direction due North. At long. 157°45′12″, a maximum shift of about 20m. to the north practically disappears at points about 410m. East & West. At long. 157°44′50″ the receding of the shore line in the new survey appears to be one of adjustment in the older survey. In the vicinity of long. 157°43′40″-50″, general local changes have occurred. A similar condition occurs at ⊙ Wis, long. 157°44′ and extends to ⊙ Quo.

The low water curve of T-4376 affords more general agreement with the zero curve of the Hydro than the present survey, T 4687.

9. The 40 ft sdg. (pos. 199j) in lat. 21°16′51.″5, long. 157°42′54″ was omitted as recommended by the Chief of Party. No information relating to an indication of this excessive depth could be found by the verifier in other surveys.

This 40′ sounding may have been a lava tube. It lies on axis of fault extending from Makapuu to Koko Head. HAP.

10. The coral reefs were inked by the verifiers.

11. Respectfully submitted — Harold W. Murray

SECTION OF FIELD RECORDS

Review of Hydrographic Sheet No. 5208.
Maunalua Bay, South Coast of Oahu, Hawaiian Islands.
Surveyed in 1931.
Instructions dated July 1931 (Special - see Desc. Report).

Chief of Party - Hubert A. Paton.
Surveyed by - Hubert A. Paton.
Protracted by - J. H. Becker.
Soundings plotted by - H. A. Paton.
Verified and inked by - Harold W. Murray.

1. The records in general conform to the Hydrographic Manual. "Reef awash" would have been a better descriptive term than "rocks awash" as used in the records. The boat sheet uses the term "coral reef" though employing the rock awash symbol in place of the coral reef symbol in representing the outline of the reefs.

2. The plan and extent of development conform to the requirements of the Hydrographic Manual and the work satisfies the particular object of the survey as outlined in the introductory paragraph of the Descriptive Report.

3. Soundings are in good agreement at crossings of lines. The word "breakers" in the entrance to the bay northward of Koko Head denotes breaking waves in a moderate swell while surveying in this vicinity. On "k" day a series of positions were taken on the low water line at low water to supplement the zero curve as developed by the sounding boat.

The "*rk" on the reef line were plotted from notes in the records but are not believed to be distinguishable from the general coral reef in their vicinity. No prominence was given to them on the boat sheet by the survey party. They should be considered as points definitely located on the reef.

4. Depth curves can be drawn satisfactorily; zero, 6, 12, 18 and 30 foot curves are shown.

5. Junctions.- On the west this survey slightly overlaps H. 4673 (1926) with a very good agreement outside the reef line. Inside the reef the former survey does not show any development.

The southern part of sheet (H. 5208) overlaps H. 4553 (1926) scale 1-10,000 depth unit fathoms, and shows good general agreement of depths. The curves on the latter sheet are very much generalized when compared with the present survey; H. 4553 is supplementary to H. 3253.

6. Comparison.- Sheet H. 3253 (1910-11) scale 1-20,000, covers a part of the area under consideration. The depths outside the reef line are in good agreement. On the bar at the entrance to the bay northward of Koko Head, H. 5208 gives 5 feet as the controlling depth where the 1910 survey shows only 3 feet. The rock awash on the bar found by the 1910 survey was not confirmed.by the later survey but as the reference in the 1910 records was very definite "Reef awash 5 m off port side" and at a good angle position it has been placed on H. 5208 in red.

H. 5208.

Charts 4131, 4110, and 4116 were examined in connection with this review. All inshore details are omitted on the larger scale chart but 4110 shows the anchorage north of Koko Head. This should be corrected to agree with the present survey or else also expunged from the chart as confidential information.

7. The field drafting was very well done and the survey is excellent. However the existence or nonexistence of the rock awash mentioned in par. 6 should be determined at the earliest opportunity.

The confidential nature of the information on H. 5208 limits its use for charting purposes.

8. Reviewed by R. J. Christman, March 17, 1933.

Memorandum by A. L. Shalowitz.

1. Attention is called to the fact that additional lines should have been run across the bar at the entrance to the bay north of Koko Head, to fully develop the least depth over the bar and to determine the existence or non existence of the rock awash found in the same vicinity on H. 3253. From a military standpoint this is perhaps the best passage and landing place on the entire sheet and well warrants a thorough examination. It is also noted that in the chief of party's special report to the Army Engineers (a copy of which is attached to the descriptive report) a bearing of N22°E on ⊙ Rid is given as the best course for crossing the bar with a depth of five feet. This passes within 10 meters of the rock awash mentioned above and was probably given without knowledge of the existence of the rock. It is possible that the best water for crossing the bar exists to the westward of the rock awash. The rock awash and several 3 foot soundings all from H. 3253 have been transferred to the sheet in red, as neither one is considered definitely disproved. The rock awash h[illegible] not been carried forward on strength of note by Chief of Party. A.L.S.

The rock referred to is probably shown 150 meters too far west. I examined this bar very carefully and am confident there is no rock (called a reef in sounding record) here. H.A. Paton

2. Referring to ¶5 of the review, a complete junction should be effected between this survey (H. 5208) and the survey of 1926) (H. 4673). This should include the delineation of the inshore limits of the coral reef and the channel between the coral reef and the shore.

3. The notes regarding landings and channels between coral reefs have been added to the smooth sheet from the boat sheet. Additional notes as to landings will be found on the topo. sheet (T. 4687).

4. Sheet Inspected by A. L. Shalowitz.

Approved: L. O. Colbert, Chief, Section of Field Records.

E.H. Pagenhart

F.S. Borden
Chief, Section Field Work.

G.T. Rude
Chief, H. & T.

SECTION OF FIELD RECORDS

Review of Hydrographic Sheet No. 5208,
Maunalua Bay, South Coast of Oahu, Hawaiian Islands.

"Supplemental Cartographer's Review"

Chief of Party	Hubert A. Paton.
Surveyed by	Hubert A. Paton.
Protracted by	J.H. Becker.
Soundings Plotted by	Hubert A. Paton.
Supplemental Verification and inking by	E.W. Smith.

1. After the completion of the verification and inking of this sheet, it was discovered that the "Tide Reducers" in the "Sounding Records" had been entered and applied to the nearest 1-foot, rather than to the nearest $\frac{1}{2}$-foot.

The records were accordingly sent back to the Division of Tides and all changes made in the "Reduction for Tide" in all cases where it affected depths of 6-feet or less.

In the supplemental verification it was found that this affected a large number of soundings inside of the reefs; changing practically all of the (0) soundings to either $\frac{1}{2}$ or 1 foot soundings, and increasing nearly all other soundings by $\frac{1}{2}$ or 1 foot. The net effect was that practically all soundings inside the coral reef had to be changed to correspond to the changed tide reducers, as well as numerous soundings in the channels and other oarea where little slope was indicated.

With this change of soundings, practically all of the "low water line" curve back of the reefs was eliminated, with the exception of "k" day when the surveyor walked the low water line, and a 0 (zero) tide reduction occured.

Respectfully submitted:

Elbert W. Smith

Elbert W. Smith,
Cartographer.

Form 537
Ed. Sept., 1929

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office

Field No. 12

REGISTER NO. 5208

State ~~Territory of~~ Hawaiian Is.

General locality ~~Island of Oahu~~ South Coast of Oahu

Locality Maunalua Bay

Scale 1:5000 Date of survey Nov. & Dec., 1931

Vessel Whaleboat # 10865

Chief of Party Hubert A. Paton, Lieut. (j.g.)

Surveyed by do

Protracted by J.H.Becker, Sgt. C.E. U.S.A. and H.A.Paton

Soundings penciled by H. A. P.

Soundings in ~~fathoms~~ feet

Plane of reference Mean lower low water.

Subdivision of wire dragged areas by

Inked by *Harold W Murray*

Verified by *H.W.M.*

Instructions dated July 14th, 1931

Remarks: Surveyed in cooperation with U. S. Army.

[redacted]

U. S. GOVERNMENT PRINTING OFFICE: 1929

Field Records [redacted]

HYDROGRAPHIC SHEET No. 3300

The following statistics will be submitted with the cartographer's report on the sheet:

Number of positions on sheet	1508
Number of positions checked	427
Number of positions revised	6
Number of soundings recorded	6963
Number of soundings revised	49
Number of signals erroneously plotted or transferred	✓

Date: Feb. 28, 1933

Cartographer: Harold W. Murray

Applied inshore hydrography to chart 4131
N.F. Stegman 4/21/47

Applied to reconstruction 4131 (mostly via current chart 4131) C.A.M. 1949